

Notice of Allowability

Application No.

10/709,615

Examiner

John Pettitt

Applicant(s)

GUNAWARDANA ET AL.

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 04/09/2007.
2. ☒ The allowed claim(s) is/are 1-13 and 26-48.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Kevin Mcenaney on June 7, 2007.

The application has been amended as follows:

In regard to claim 1, the recitation "a vortex tube coupled to the first pressure chamber", (line 4) will read --a vortex tube coupled to the first gas storage chamber--.

In regard to claim 2, the recitation "and the second pressure chamber " (line 2) will read --and the second gas storage chamber--.

In regard to claim 3, the recitation "between the first pressure chamber"(line 2) will read --between the first gas storage chamber--.

In regard to claim 4, the recitation "the exchanger"(line 3) will read --the heat exchanger--.

In regard to claim 6, the recitation "the third chamber into the second chamber"(line 4) will read --the third gas storage chamber into the second gas storage chamber--.

In regard to claim 7, the recitation "through a space between the walls" (line 2) will read --through a space between the walls of the cooling chamber--.

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In regard to claim 10, the recitation "between the first, second, and cooling chambers" (line 2) will read --between the first gas storage chamber, the second gas storage chamber, and the cooling chamber--.

In regard to claim 27, the recitation "the first pressure gas storage chamber" (line 2) will read -- the first gas storage chamber--.

In regard to claim 28, the recitation "from the second pressure gas storage chamber" (line 2) will read --from the second gas storage chamber--.

In regard to claim 30, the recitation "the second pressure chamber, and pumping a fluid from the third chamber into the second chamber" (lines 2-3) will read -- the second gas storage chamber, and pumping a fluid from the third gas storage chamber into the second gas storage chamber--.

In regard to claim 31, the recitation "through a space between the walls" (line 2) will read --through a space between the walls of the cooling chamber--.

In regard to claim 34, the recitation "between the first, second, and cooling chambers" (line 2) will read --between the first gas storage chamber, the second gas storage chamber, and the cooling chamber--.

In regard to claim 38, the recitation "a vortex tube coupled to the first pressure chamber" (line 4) will read --a vortex tube coupled to the first gas storage chamber--.

Further, the recitation "the first pressure chamber" (lines 9-10), will read --the first gas storage chamber--.

In regard to claim 39, the recitation "the second pressure chamber" (line 2) will read --the second gas storage chamber--.

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In regard to claim 40, the recitation "the first pressure chamber and the vortex tube, the third chamber" (line 2) will read --the first gas storage chamber and the vortex tube, the third gas storage chamber--.

In regard to claim 41, the recitation "the exchanger" (line 2) will read --the heat exchanger--.

In regard to claim 42, the recitation "between the walls" (line 2) will read --between the walls of the cooling chamber--.

In regard to claim 44, the recitation "between the first, second, and cooling chambers" (line 1-2) will read --between the first gas storage chamber, the second gas storage chamber, and the cooling chamber--.

In regard to claim 46, the recitation "second gas storage chamber" (line 2) will read --the second gas storage chamber--.

In regard to claim 47, the recitation "second gas storage chamber" (line 2) will read --the second gas storage chamber--.

In regard to claim 48, the recitation "from the third chamber into the second chamber" (lines 4-5) will read --from the third gas storage chamber into the second gas storage chamber--.

Finally, the independent claims 1 and 26 will be amended as specified below:

In regard to claim 1, immediately following line 8 ("cool fluid flow from the vortex tube into the cooling chamber."):

--wherein the cool fluid flow is retained within the housing--.

In regard to claim 26, immediately following line 10 ("vortex tube into the cooling chamber."):

--(d) retaining the cool fluid flow within the housing.--

Reasons for Allowance

The following is an examiner's statement of reasons for allowance: Dukhan et al. (US 6,401,463) teaches a housing (30) containing a compressor (58), and first gas storage chamber (60), a vortex tube (64), a cooling chamber (heat exchanger attached to 44), and a second gas storage chamber (34); however, the cool fluid flow is vented out of the housing (30). Further, though O'connell (US 4,333,017) teaches a closed loop vortex tube system and Difoggio (US 6,672,093) teach a housing and insulating flask for a cooling system in a down hole drilling environment, Difoggio expressly teaches away from use of compressors in housings within the down hole environment, stating that compressor seals are not generally capable of operating sufficiently in the temperature range experienced in bore holes (column 3, lines 60-65). Therefore, one of ordinary skill in the art would not find it obvious to replace the sorbent cooler with a vortex tube cooling system which retains the cool fluid flow within the housing.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Pettitt whose telephone number is 571-272-0771. The examiner can normally be reached on M-F 8a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John Pettitt/
Examiner
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JFP III
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FRANTZ JULES
SUPERVISORY PATENT EXAMINER

